OR-6. NITROAZOLOPYRIMIDINES – ATTRACTIVE STRUCTURES IN MEDICINAL CHEMISTRY

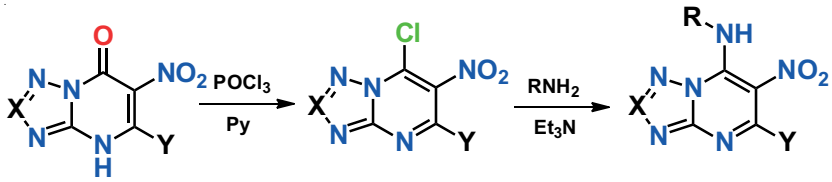
K. V. Savateev, V. V. Fedotov, E. N. Ulomsky, V. L. Rusinov

Ural Federal University of the first President of Russia B. N. Yeltsin,
Mira St., 19, Yekaterinburg, 620002, Russia

E-mail: i-krafttt@yandex.ru

It's known that nitrocompounds are oftenly highly toxic hence their use as pharmaceuticals is limited. On the other hand, it was previously shown that a series of nitroazolotriazines have a pronounced useful biological activity coupled with an extremely low, uncharacteristic for this class of structures, toxicity [1, 2]. From this point of view the structural-related class of heterocycles – nitroazolopyrimidines is promising for the study of biological activity. However, the literature data about modification methods of this structures is limited. In particular, it is reported that chlorodeoxygenation of the corresponding nitro-containing triazolopyrimidinones results in the formation of undesirable byproducts due to the high reactivity of the resulting halogen intermediates.

We have developed a scheme for the synthesis of a wide range of 6-nitro-7-alkylaminoazolo[1,5-*a*] pyrimidines (3) with the help of pyridine as the activating agent. Pyridine has sufficient basicity to activate the chlorooxygenation process, and is completely non-nucleophilic, thereby it was possible to perform amination in situ for the triazole derivatives, or isolate the corresponding 5-methyl-6-nitro-7-chloro-tetrazolo[1,5-*a*]pyrimidine as individual compound and characterize it. Variously substituted 6-nitro-7-alkylaminoderivatives (3) were synthesised in this manner with a satisfactory yields.



X = N, CH, CMe, CSMe, CCOOEt, CCF_3,

R = Pr, Bu, $(CH_2)_{2\text{-}4}OH$, $(CH_2)_2Ph$-4-Cl, $(CH_2)_2Ph$-4-OH

Y = H, Me, NH_2

The obtained heterocycles can be considered as convenient precursors for the synthesis of abnormal nucleosides of the purine series, but also they have independent value as structural analogs of the adenosine receptors effectors and compounds with antiglycating activity. Biological studies have shown that some structures demonstrate antiseptic effect in vivo and others inhibit the Mayar reaction in vitro, which is associated with antiglating activity and prevention of complications of diabetes mellitus.

References

1. The patent of the Russian Federation. Sodium salt of 4-oxo-1,4-dihydropyrazolo[5,1-*c*]-1,2,4-triazine-3,8-dicarboxylic acid diethyl ester, monohydrate / Rusinov V. L., Chupakhin O. N., Charushin V. N., Sapozhnikova I. M., Bliznik A. M., Spasov A. A., Petrov V. I., Kuznetsova V. A., Soloveva O. A., Matsevich A. I. № 2612300 ; 11.02.2015.

2. The patent of the Russian Federation. 2-Methilsufanil-6-nitro-7-oxo-1,2,4-triazolo[5,1-*c*][1,2,4]triazinid L-argininia dihydrate, possessing anti-virus activity, a method for its preparation and application by a program, and treatment of fever of western nile / Rusinov V. L., Chupakhin O. N., Ulomsky E. N., Savateev K. V., Borisov S. S., Novikova N. A., Loginova S. Ya., Borisevich S. V., Sorokin P. № 2536874 ; 11.01.2013.

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